

## Chapter 2 Linear Relations and Functions

## 2-1 Relations and Functions

Relation--set of ordered pairs

 $\{(2,5), (3,6), (4,7)\}$ 

Domain--set of 1st coordinate

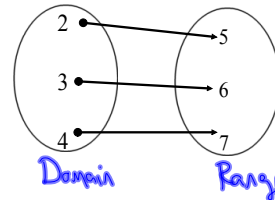
 $\{2, 3, 4\}$ 

Range--set of 2nd coordinate

 $\{5, 6, 7\}$ 

Function--relation in which each element in the domain is paired with exactly one element in the range

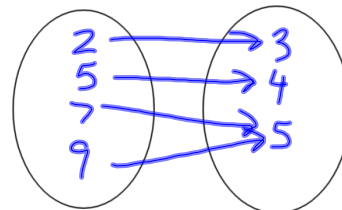
Mapping

A function because every  $x$  is paired with exactly one  $y$ .

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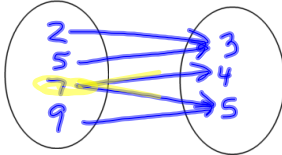
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One-to-one--when every element in the range is paired with exactly one element in domain

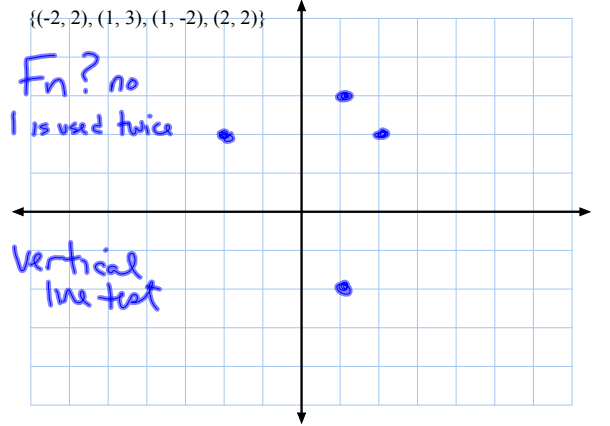
(Every  $y$  has one  $x$ ) $\{(2, 3), (5, 4), (7, 5), (9, 5)\}$ Function? yes  
One to one? no

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$\{(2,3), (5,3), (7,4), (7,5), (9,5)\}$ 


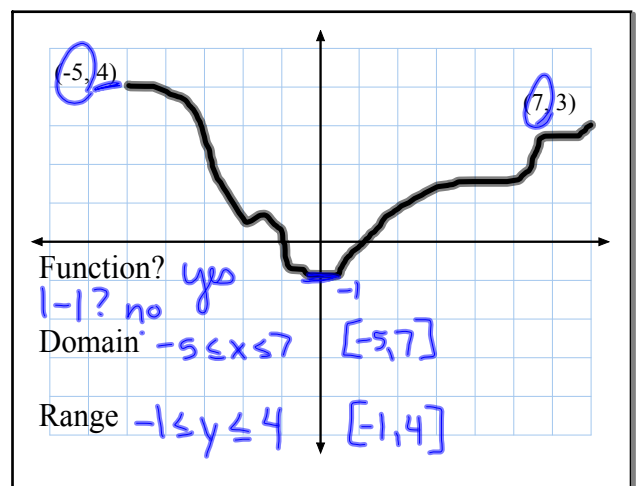
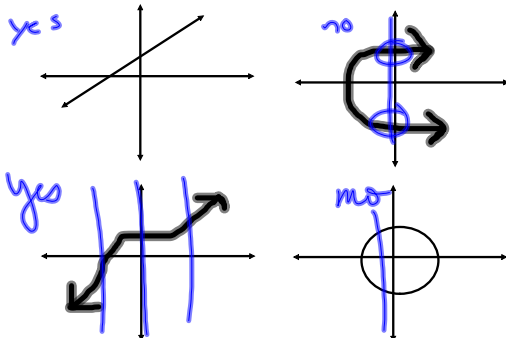
Function? no

 $\{(-2,2), (1,3), (1,-2), (2,2)\}$ 
Fn? no  
1 is used twiceVertical  
line test

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Sep 25-11:12 AM

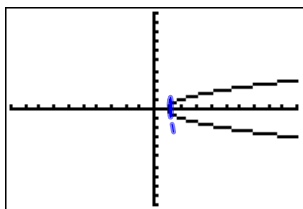
Is it a function?



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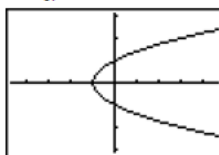
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$$x = y^2 + 1$$

Function? *No*Domain  $[1, +\infty)$ Range  $(-\infty, +\infty)$   
 $\mathbb{R}$ 

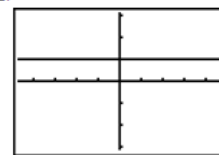
Worksheet

1.



a. no b. no  
 c. D:  $(-1, +\infty)$   
 $x \geq -1$   
 d. R:  $\mathbb{R}$   
 $(-\infty, +\infty)$

2.

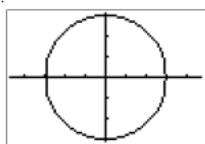


a. yes b. no  
 D:  $\mathbb{R}$   $(-\infty, +\infty)$   
 R:  $y = 1$   $\{1\}$

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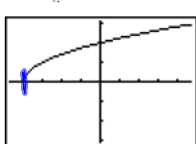
3.



a. No b. No  
 D:  $[-3, 3]$   
 $-3 \leq x \leq 3$

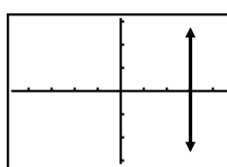
R:  $[-3, 3]$   
 $-3 \leq y \leq 3$

4.



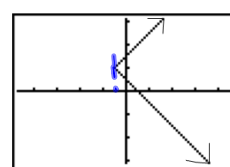
yes, yes  
 D:  $[-4, +\infty)$   
 R:  $[0, +\infty)$

5.



no no  
 D:  $x = 3$   
 R:  $\mathbb{R}$

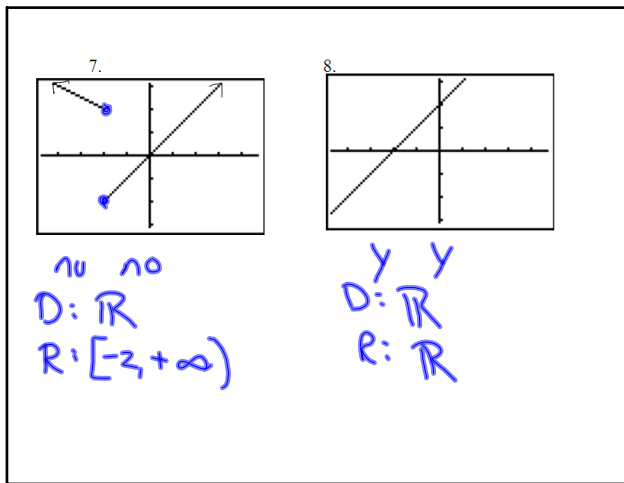
6.



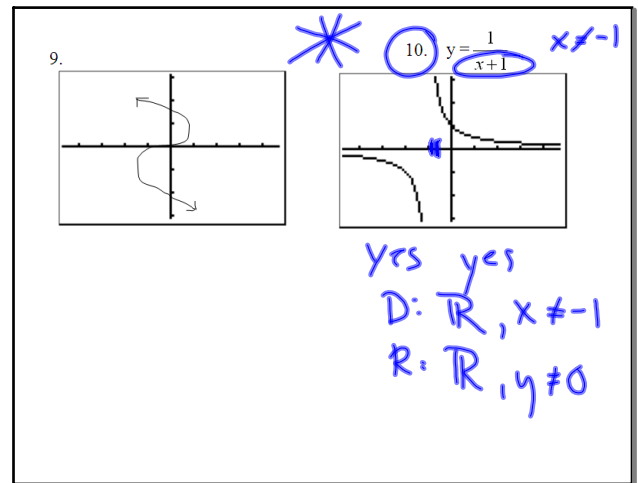
no no  
 D:  $[\frac{1}{2}, +\infty)$   
 R:  $\mathbb{R}$

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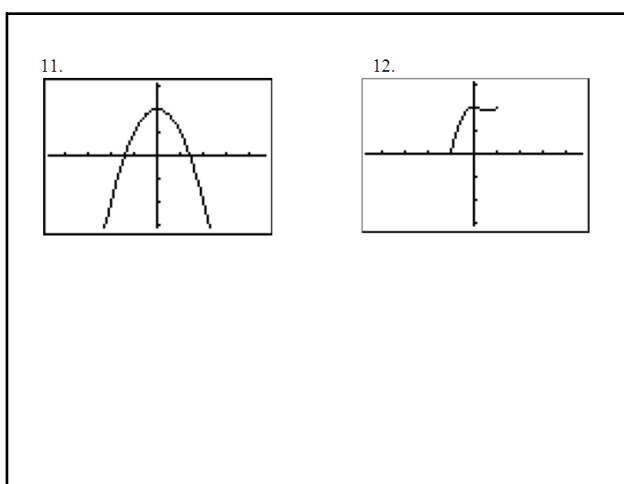
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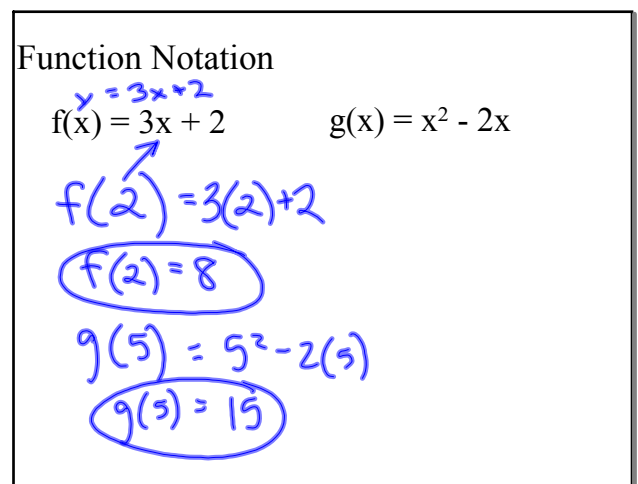
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HW

p60-61

#s 4-6, 17-22, 23-27odd (do not  
graph), 42, 44-47, 51

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